

BIOLOGICAL NOTES ON ORIENTAL HEMIPTERA, No. 1.

BY

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(With a Plate.)

This, the first of a proposed series of biological notes on Oriental Hemiptera illustrates the metamorphoses of two widely distributed forms, *viz.*, *Dindymus sanguineus* and *Caenocoris marginatus*.

1. *Dindymus sanguineus* (Fabr.)

Pl. figs. 1a—5a and text figs. 1—4.

This belongs to the Family Pyrrhocoridae, and is distributed from India and Ceylon to China. The examples now described were bred up from eggs taken in Macao. The metamorphoses of *Pyrrhocoris apterus* and of some species of *Dysdercus* are partly known, but not of any species of *Dindymus*.

A pair was taken in cop. on February 16th, 1907, in the evening and remained in that position till noon of March 2nd, when they separated and began to feed on house-flies. The female, with enormously distended abdomen, laid a batch of 30-40 eggs in a heap on the floor of the cage (though fresh vegetation was always kept in it) on the evening of March 5th.

The *ova* are elongate oval, without a special cap, very pale yellowish.

(Pl. fig. 1a). They hatched on March 30th.

The first nymphal instar is pale orange with red eyes (fig. 2a); the labium (rostrum) on the first day reached only a little way beyond the thorax. A moult occurred on April 4th; the second instar is dark orange-coloured, with little change in form. The third instar hatched on April 8th, blood-red, shining, head, thorax, &c., reddish brown, antennae and legs brown. The fourth instar hatched April 13th, and is very similar to the preceding, but has the fourth segment of the antennae whitish at the base. These young nymphs are very fond of Termites and suck them in preference to anything else. The fifth instar hatched on April 28th (Pl. fig. 3a), followed by the sixth instar on May 7th; but there was little change, except in size. The seventh instar hatched on May 14th, followed by the eighth on the 25th. In the latter the tegminal pads are well developed, reddish, as also the pronotum; head and abdomen apically blackish; eyes dark red. Abdomen basally greenish. Pleurites chequered red and yellowish (Pl. fig. 4a).

In the first instar the odoriferous orifices are very minute, orange coloured. In the third they are blackish and remain so till the last. (The nymphs then died.)

Such a large number of moults in a Heteropteron is unprecedented and requires wider investigation. For the present, they may be grouped as follows:—(*) (fu). An Ethiopian Cimicid, *Bathyoecia thalassina*, has been

* The credit for the major part of this paper is due to Mr. Kershaw. I have merely identified the material and arranged the letter press, occasionally adding a few details.
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reported by Schouteden to have 7 nymphal instars, (*cf.* Zeitschr. Wiss. Insektenbiol. II, 82—8, figs. 1—9 (1906)).

I. Orange coloured ... Instars 1, 2

II. Blood-red ... Instars 3—7
and

III. Blood-red and green ... Instar 8

The duration of the metamorphoses was as follows :—

| | | | |
|--|-----|----------|-------|
| Copulation, February 16th to March 2nd | ... | 13 to 14 | days. |
| Interval, March 2nd to 5th | ... | 3 | „ |
| Ova laid March 5th, hatched 30th | ... | 25 | „ |
| Second instar hatched April 4th | ... | 5 | „ |
| Third 8th | ... | 4 | „ |
| Fourth 13th | ... | 5 | „ |
| Fifth 28th | ... | 15 | „ |
| Sixth May 7th | ... | 9 | „ |
| Seventh 14th | ... | 7 | „ |
| Eighth 15th | ... | 11 | „ |
| | | 98 | „ |

If we allow 10 days for the eighth (and probably last) to hatch out to the adult state, and 2 days for complete maturity, that gives 110 days, from copulation to copulation, or say 100 days for a complete life-cycle.

Neither in nymphal nor adult states has *Dindymus* any appreciable odour.

The adults and older nymphs seem entirely carnivorous, feeding on other bugs, thin-shelled snails, lepidopterous larvæ and pupæ, &c. Mr. Kershaw has also seen an adult, with its setæ thrust into the hard ootheca of the Mantid *Hierodula saussurei*, W. F. Kirby. In feeding, the bug often sucks without using the labium at all! In this case the bug constantly thrusts the setæ in and out of the body of its prey.

The following text figure illustrates some of the methods of using the labium while feeding. :—

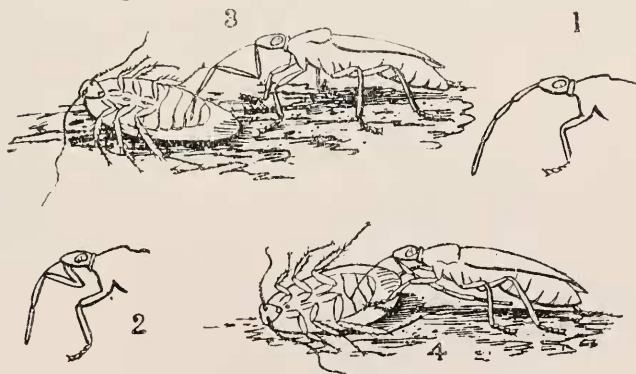


Fig. 1. *Dindymus sanguineus* sucking a cockroach, setæ wholly within the labium.

Fig. 2. The same at another time, the labium acutely angled, setæ partly exposed.

Fig. 3. The same with

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the setæ uncovered between the angles of the labium.

Fig. 4. The bug using the setæ without the guidance of the labium.

2. *Caenocoris marginatus* (Thunberg.)

Pl. figs, 1—7.

This form belongs to the Myodochidae (or "Lygeidae" of some authors) and has much the same geographical distribution as the *Dindymus* and is also without any offensive smell. The only near ally of which the metamorphoses are fairly known is the American *Stalagmostethus turcicus*. The eggs observed were deposited about the middle of December.

The period from hatching to maturity was fifty-three days; in wet seasons it is perhaps much less. The exact number of moults was not observed.

The ova are deposited on the upper side of a leaf in a semi-circular batch of about twenty, touching one another. When first laid they are pale yellowish-red, deepening to blood-red, the caps white (Pl. fig. 1-2) the entire egg usually splits longitudinally, though sometimes the upper part of the shell breaks transversely some distance below the cap. *Nymphal instars*.—When first hatched the nymphs are blood-red, antennæ and legs brownish. Abdomen almost globular in section. They feed on vegetable juices, especially *Torocarpus wightianus*, Hook. and Arn., a twiner very common in South China. The labium reaches to about the middle of the abdomen, gradually lengthening and reaching beyond the apex in much about a week. The bug is less globular in section, when about one-fourth of an inch long, the legs and labium being black, the latter again reaching only to the middle of the abdomen (Pl. fig. 3.) When about four weeks old, the tegminal pads are reddish-brown and fairly distinct (Pl. fig. 4-5). At five weeks they are black.

To facilitate the final moult, the bug hangs from a twig, and occasionally brings the hind legs over the back, seraping them down the tegmina towards the pearly white membrane (fig. 6). In about three hours after this moult is accomplished the membrane becomes dark smoky, and the red colour of the other parts darkens. In about eight hours the change of colour is complete (fig. 7).

EXPLANATION OF PLATE.

| | | | |
|----------|-----|-----|--|
| Fig. 1a. | ... | ... | <i>Dindymus sanguineus</i> , ova. |
| „ 2a. | ... | ... | First nymphal instar. |
| „ 3a. | ... | ... | Fifth nymphal instar. |
| „ 4a. | ... | ... | Eighth nymphal instar. |
| „ 5a. | ... | ... | Adult. |
| „ 1. | ... | ... | <i>Caenocoris marginatus</i> , ova. |
| „ 2. | ... | ... | The same, enlarged. |
| „ 3. | ... | ... | First (?) nymphal instar (about a week old). |
| „ 4. | ... | ... | A later instar (about four weeks old). |
| „ 5. | ... | ... | The same in profile. |
| „ 6. | ... | ... | Newly emerged adult. |
| „ 7. | ... | ... | Adult with matured colouring. |